

July 5, 2006
Case No.: DE 020213 (7790/455)
Serial No.: 10/527,854
Filed: March 16, 2005
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SPECIFICATION AMENDMENT

Please amend the paragraph starting on page 9, line 20 as follows:

"In connection with the present invention, the second switching process from T_2 to T_1 will now be considered. As regards the drive in accordance with the prior art (Fig. 3), a second dead time Δt_2 was always provided for, in which case first the second switch T_2 is turned off and the first switch is not turned on again until after the dead time Δt_2 had ended. The second switching transition is a "hard" switching transition wherein turn on of T_1 occurs at a point in time when its switching capacitance is charged to approximately V_1 . During the dead time, the current I_L is led again through the freewheeling diode D_2 . After the turn-on of T_1 , the diode D_2 is operated in the reverse direction however. A reverse current (reverse recovery) through the freewheeling diode D_2 then takes place during a reverse recovery time, said freewheeling diode conducting in the reverse direction for a short period of time. This reverse current through the diode D_2 is designated "RR" in FIG. 3[?]. In this Figure however the amplitude as well as the duration of the reverse recovery current are exaggerated for clarity. As the variation of the current I_{T_1} through the first switching element shows, the reverse recovery current leads to a clearly symmetrical increase of I_{T_1} . This leads to substantial losses in the each switching cycle."

Please amend the paragraph starting on page 11, line 13 as follows:

"A distinction between, on the one hand, the above-mentioned cases of diode conduction, and, on the other hand, shoot through current can be made by considering the voltage $[U_{T_2}] V_{T_2}$ across the second switching element T_2 . For this purpose, the controller 26 comprises appropriate inputs. In Fig. 7, the variation of the voltage V_{T_2} after turn-off of the second switching element T_2 is shown. Three variations with respect to time A, B and C are shown, B being the variation of V_{T_2} upon the occurrence of a shoot through current, C the voltage variation in the case of diode conduction and A a variation that is aimed at, whereby both diode conduction and shoot through currents are precluded. The representation of Fig. 7 is a purely qualitative approach intended to provide a basis explanation of the interrelationships."

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Please amend the paragraph starting on page 11, line 13 as follows:

“The above-described embodiments of the invention are explained with reference to synchronous buck converters. The mode of driving, the control methods and the current limitation can also be applied, however, in any desired combination in other converter topologies (Figs. 1b-1d). In all topologies, the controller 26 that sets the drive of the switches can, on the one hand, control the output voltage in a known manner and, on the other hand, set the timing of [(?)] switching such that the switching losses are minimized.”